MATH 150 - 07 Elements of Calculus I - Fall 2011

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Office Hours: M 4-5
TR 2:30 - 3:30
F 1:30 - 3
+ when I am there
+ appointments

TEXT: Calculus Concepts, by LaTorre, Kennelly, et.al., Cengage Learning (Special edition for MATH 150, Xavier University)

COURSE DESCRIPTION: Calculus is the mathematics used to describe processes of change. Differential calculus is used to study rates at which change occurs, and integral calculus is used to calculate how much change accumulates given that the rate of change is known. MATH150 is an informal introduction to both differential and integral calculus, designed for a general audience. We will begin with learning to "model" (i.e. "imitate", "mimic") real data using "functions", which are determined using the TI-83/84 graphing calculator. We will then use ideas from calculus to analyze these models (functions) and draw conclusions about the situation which generated the data. We will use the numerical and graphical capabilities of the TI-83/84 in our analysis and more generally to enhance our understanding of the basic calculus concepts. Thus, a three-fold development of calculus (numerical, graphical, and algebraic) replaces the traditional (purely algebraic) development. Strong emphasis in MATH150 is placed on clearly communicating questions and interpretations of the results obtained, and to provide logical and convincing arguments for the results.

PREREQUISITE: The prerequisite for MATH 150 is MATH 120 - Elementary Functions, or its equivalent. In particular, you should be familiar with the graphs and basic properties of linear, quadratic, cubic, exponential, and logarithmic functions. You should be able to do routine algebra when necessary.

CALCULATORS: A Texas Instruments TI-83 or 83 Plus (or 84/84 Plus) is required for this course. You will need it in class, for homework and on the exams. Other calculators are NOT adequate.

CLASS PREPARATION: In preparation for each class I recommend that you read (15-20 minutes per section) and write a short list of key words, questions, and a brief summary for the section indicated for the next day on the course web page (see below). Ask these questions in class when the issue/question arises..

HOMEWORK: Every day, homework will be assigned and posted on the course web page (see below). You are expected to work ALL assigned exercises, keeping in mind that these exercises are not necessarily repetition of things that were done in class, but that the exercises are a tool to bring up questions, to push a topic we discussed in class further, or to ask you, the students, to apply recently discussed concepts and procedures creatively. It is important for your success in this class that you take the homework seriously, that you practice answering in complete sentences (instead of simply coming up with "the right answer"), and that you provide reasons for your solutions/conclusions. Explanation and answers in completed sentences will be expected on quizzes and tests. If you want feedback on any particular exercise, I invite you to bring it to my office, or to hand it in and ask me to see if your answer is correct/satisfactory. It is YOUR responsibility to do this. We will usually start class with discussing one, or maybe two of the HW exercises. Bring your questions to class, ready to ask at the beginning.

ATTENDANCE: Class attendance is crucial. The class meetings provide the introduction and explanation of new topics/concepts/variations, we will go over how the calculator is used, and you will learn how problems are solved. Take copious notes in class! These notes will be your best resource. You may want to write down MORE than what ends up on the board!! ...and ask questions about the parts that are not clear. Please, be courteous and come to class on time. Please read University policies on class attendance. If you have to miss an exam for any reason, you must discuss it with me beforehand. If you miss an exam without an alternative arrangement, a grade of 0 will be assigned for that exam. If you miss classes excessively (more than three) I reserve the right to (and will!!) lower your semester grade by one letter, regardless of your performance on tests, unless we have made a different arrangement.
**QUIZZES**: 10 point quizzes may be given at the beginning, or during class, at any time, without previous announcements. There will be 8-10 such quizzes spread out through the course. If I can secure a grader for homework, I will collect homework once a week. Check the class calendar regularly for announcements.

**GRADING:**
- 3 Exams (100 points each)
- Quizzes, (100 points total)
  - (Homework if grader available) 100pts total
- Participation and overall engagement (100 points, see below)
- Final Exam (100 points)

The semester grade will be calculated from the percentage of points you accumulate from the available total.

The grading scale is

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Range</th>
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<tbody>
<tr>
<td>A</td>
<td>&quot;outstanding&quot;</td>
<td>90- &lt; 93</td>
</tr>
<tr>
<td>A-</td>
<td>...</td>
<td>&gt; 87- &lt; 90</td>
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<tr>
<td>B</td>
<td>&quot;good&quot;</td>
<td>80- &lt; 83</td>
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<tr>
<td>B-</td>
<td>...</td>
<td>&gt; 77- &lt; 80</td>
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<tr>
<td>C</td>
<td>&quot;satisfactory&quot;</td>
<td>70- &lt; 73</td>
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<tr>
<td>C-</td>
<td>...</td>
<td>&gt; 67- &lt; 70</td>
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<tr>
<td>D</td>
<td>&quot;minimal passing&quot;</td>
<td>60- &lt; 70</td>
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<tr>
<td>D+</td>
<td>or D-</td>
<td>&lt; 60</td>
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*participation includes both class meetings as well as work outside of the classroom, where "in-class" includes: attendance, being active and helpful when working in groups, asking and/or answering questions, ... , and "out of class" includes: utilizing office hours to discuss your questions and ideas with me individually, and any other initiative you show to better understand the material. Be aware that participation has the same value as one exam.

**GETTING HELP**: The best thing for you to do is to come and see ME if you have difficulties. But I am not always available, and probably the next best thing to do is to visit the Math Lab, Conaton Learning Commons Room 419. This room is staffed by knowledgable mathematics majors who are there to help you! Hours of operation are M-R 10-8, F 10-2, Sunday 2-8. Take advantage of this place - especially when I am not available (evenings and weekends)!

**GROUP WORK**: You will often be asked to work in small groups (probably pairs) in class. I encourage you strongly to study and to do homework with your classmates. Working in a group is beneficial, as long as you make sure that everyone is making contributions and that no one is left out. However, after discussing the homework, everybody should produce their own write-up, as this will be requested on tests.

**HOW TO DO WELL IN THIS COURSE:**
(1) You will notice that your providing complete information and logical arguments leading to your conclusions will be more important than "getting the right answer". Often, different answers can be supported equally well, and are in this sense equally correct. You need to get used to using words, and yes, complete sentences to convey your reasoning and conclusions. Poor expression usually leads to a weak argument. So good English is important.

(2) Come to class! Read the text! Go to the Tutoring room! Come visit me during office hours! Try the problems! Smile! Study hard! **Take class notes**, and read them! Make sure you keep up with the material in class! Don't panic! Most important of all: If you feel that you are falling behind, or that you do not understand a topic, or if you would just like to discuss a mathematical idea with me, come to my office! You are always welcome.

**CLASS WEB PAGE**: I will keep a day to day calendar for this course, indicating what we covered, the homework assignment, and a few summarizing words for each class meeting at

http://cerebro.cs.xu.edu/math/math150/11f07/calendar.html

Bookmark this URL in your browser and visit the site regularly.

**COURSE MOTTO:**

Common Sense is not just appropriate, but Crucial !!!!